Chesapeake Bay Program
A Watershed Partnership

Proposed Data layers for PCB Resource Center

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Introduction

- PCB Resource Center
  - One stop shop for all resources pertaining to implementing TMDLs
- Mapping Center
  - Source Identification
    - Point source
    - Nonpoint source
  - Relative Risk evaluation

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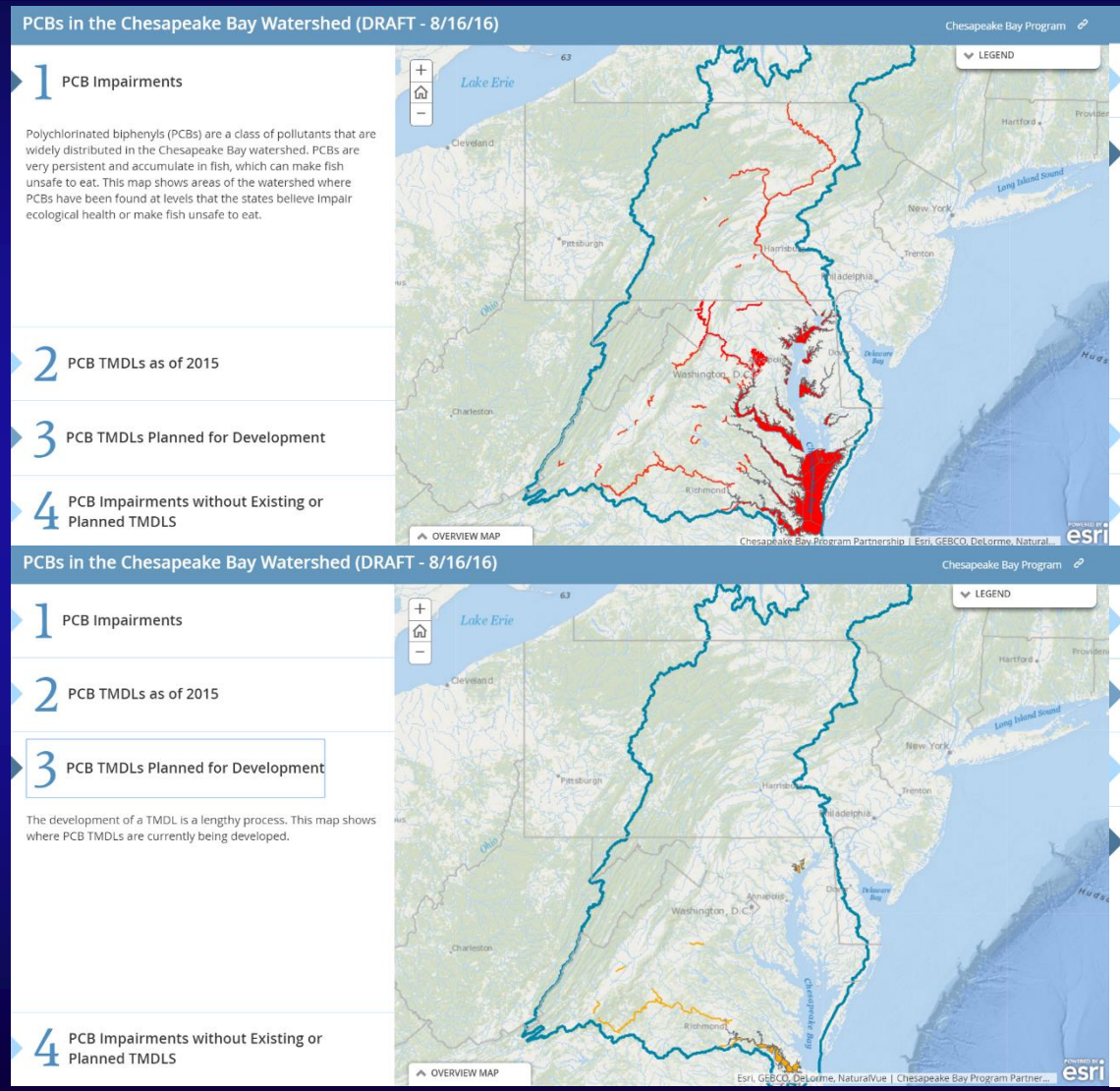
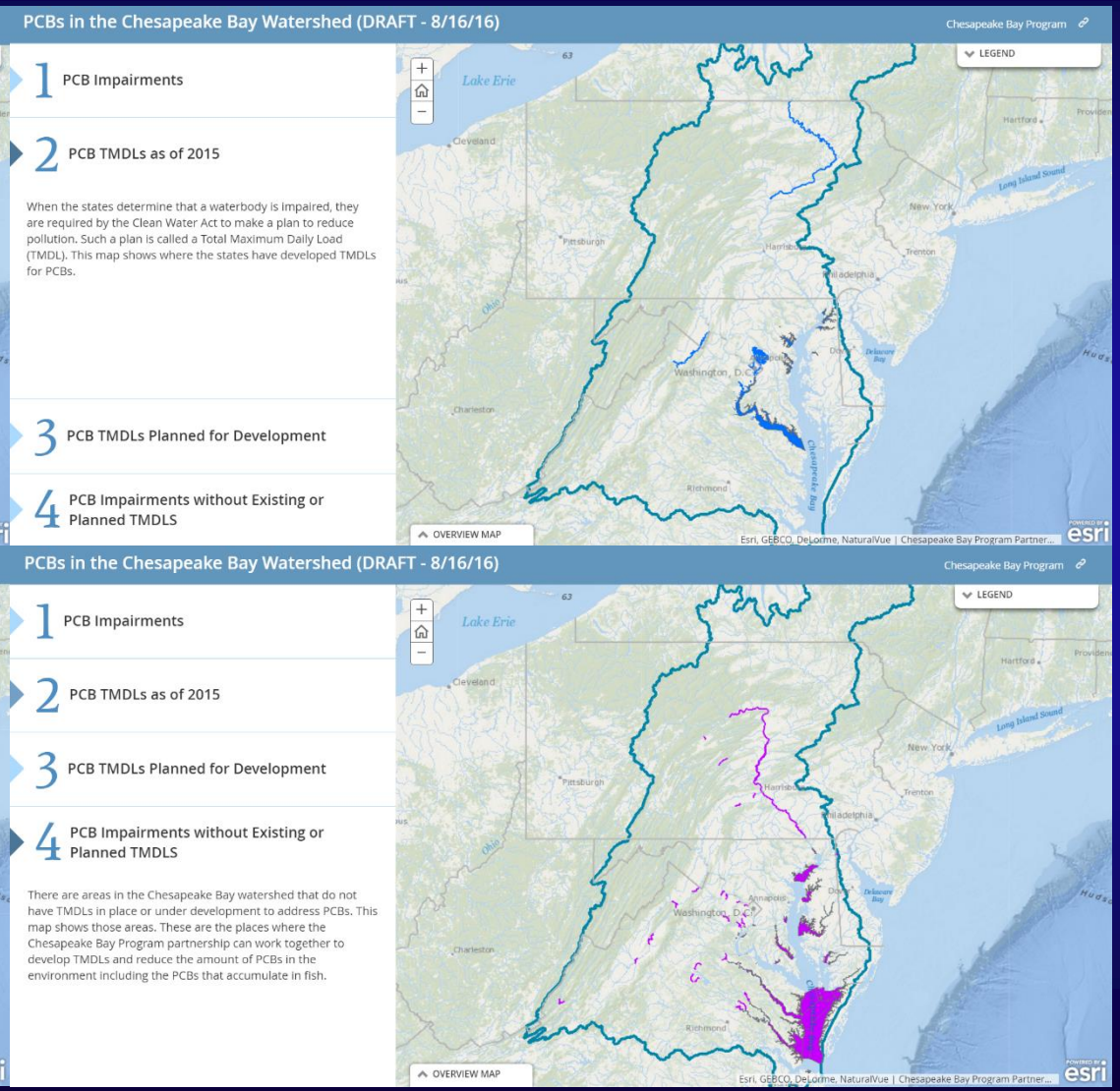
Current Efforts





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Mapping Center – Mapping sources of PCBs

- **Sources of PCBs per Agency for Toxic Substances and Disease Registry**
  - Uncontrolled landfills *
  - Hazardous waste sites *
  - Incineration of PCB-containing wastes
  - Leakage from older electrical equipment
  - Improper disposal or spills *
  - CSOs *
  - Storm water runoff *
  - Leachate from PCB contaminated sewage sludge applied to farmland
  - Deposition of vehicular emissions near roadway soil
- **EPA regulated sites for PCBs**
  - Point locations for Storage and disposal facilities *
  - Regulated/registered PCB transformers locations *
  - Facilities approved for specific decontamination processes *
  - PCB activity facilities *
  - Shipyards *
  - Superfund sites
  - Brownfield sites
  - RCRA sites

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Mapping Center – Sources and Hot Spots

- **Other potential Source data**
  - Age of Development (Census Block Group Percent developed pre-1980) *
  - Impervious Surface data *
  - Recycling facilities (particularly electronics recycling)
  - TRI database – queried for PCB CAS #'s
  - FRS database – queried for pertinent industry segments
  - National Response Center Reports – queried for PCB CAS #'s (coast guard database of all toxic contaminant spills in the US)
  - ATSDR National Toxic Substance Incidents Program National Database (data from USDOT, National Response Center, State health departments, and the media pertaining to toxic spills)
  - Volatile Organic Compound data from Nation Emissions Inventory?
  - Volatization and Atmospheric deposition (see airshed in next slide)
  - Runoff and flow information from NAWQ and NWIS sources (see fox river study slides) *
- **Pertinent regulatory data layers**
  - MS4 areas, CSOs, Publically Owned Treatment Works*
  - Current PCB impairments and TMDLs obtained from State's Integrated Water Quality Assessments*
- **Risk Data layers**
  - Public Access points*
  - Indicator species habitat and/or occurrence (fish, crabs, etc) * (define which species)
  - *End User Monitoring Data* – Lab results and location of state tests for PCBs, sediment, and turbidity

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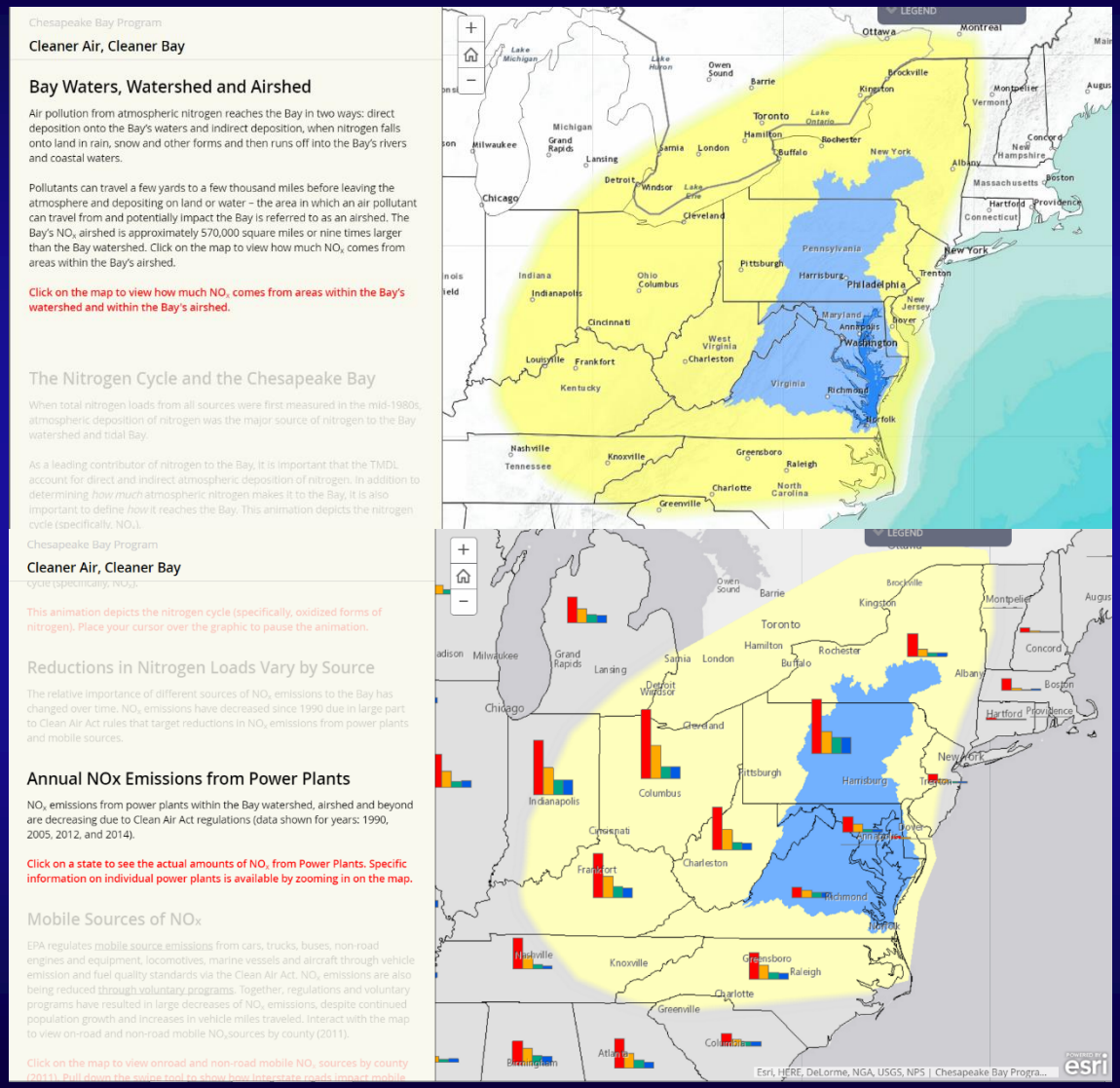
* Data readily available

Volatization and Atmospheric Deposition

- "PCB inputs into aquatic and marine reservoirs are predominantly from wet and dry deposition and from the recycling of sediment-sorbed PCBs into the water column." 1
- **Chesapeake Bay Airshed**
  - **Previous GIS products looking at NOx deposition**
  - **PCB specific airshed**
  - **Lit review for atmospheric transport and deposition of PCBs**
  - **Wet deposition could be associated with rain fall and precipitation data 1**
  - **Dry deposition mostly happens in urban centers 1**



1. https://www.atsdr.cdc.gov/toxprofiles/tp17-c6.pdf

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Seasonal Influence of PCB transport – Fox River PCB Transport Study

- Maximum PCB concentrations occurred at high flow and during the summer. PCB concentrations in water exceeded 100 ng/L only under high flow conditions (that is, during storm events). Greater than 60% of the PCB transported over the DePere Dam occurred during only 20% of the year, times when discharge was above the annual mean of 120 m^3/s (4,257 ft^3/s). These events are represented as the steep increases in the cumulative PCB transport during the summer high flow-event and spring runoff in Figure 5. 2
- High flow during winter time (where flow is determined by groundwater intrusion) did not see elevated PCB transport 2

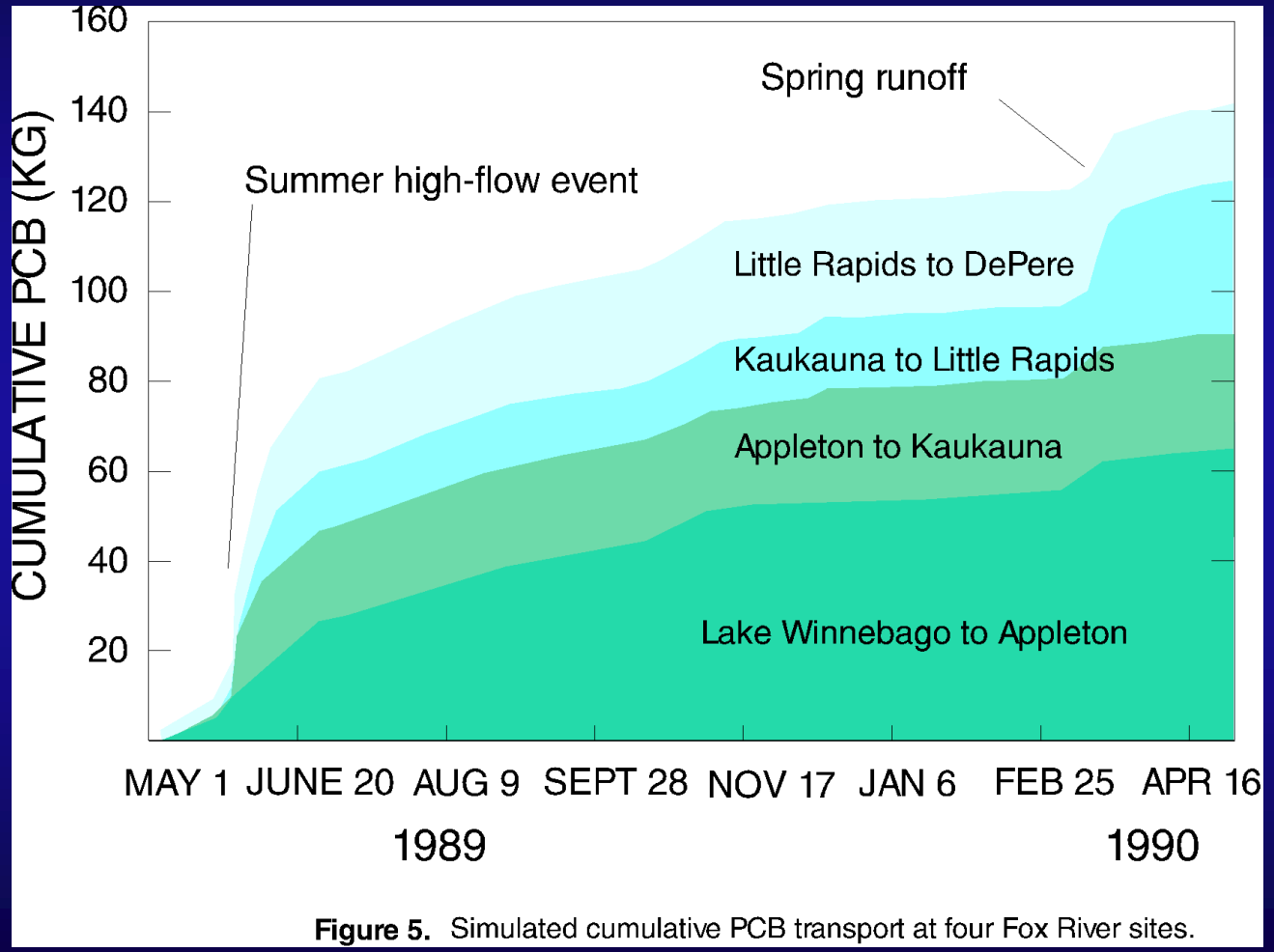

Figure 5. Simulated cumulative PCB transport at four Fox River sites.

2 http://wi.water.usgs.gov/pubs/FS-116-96/

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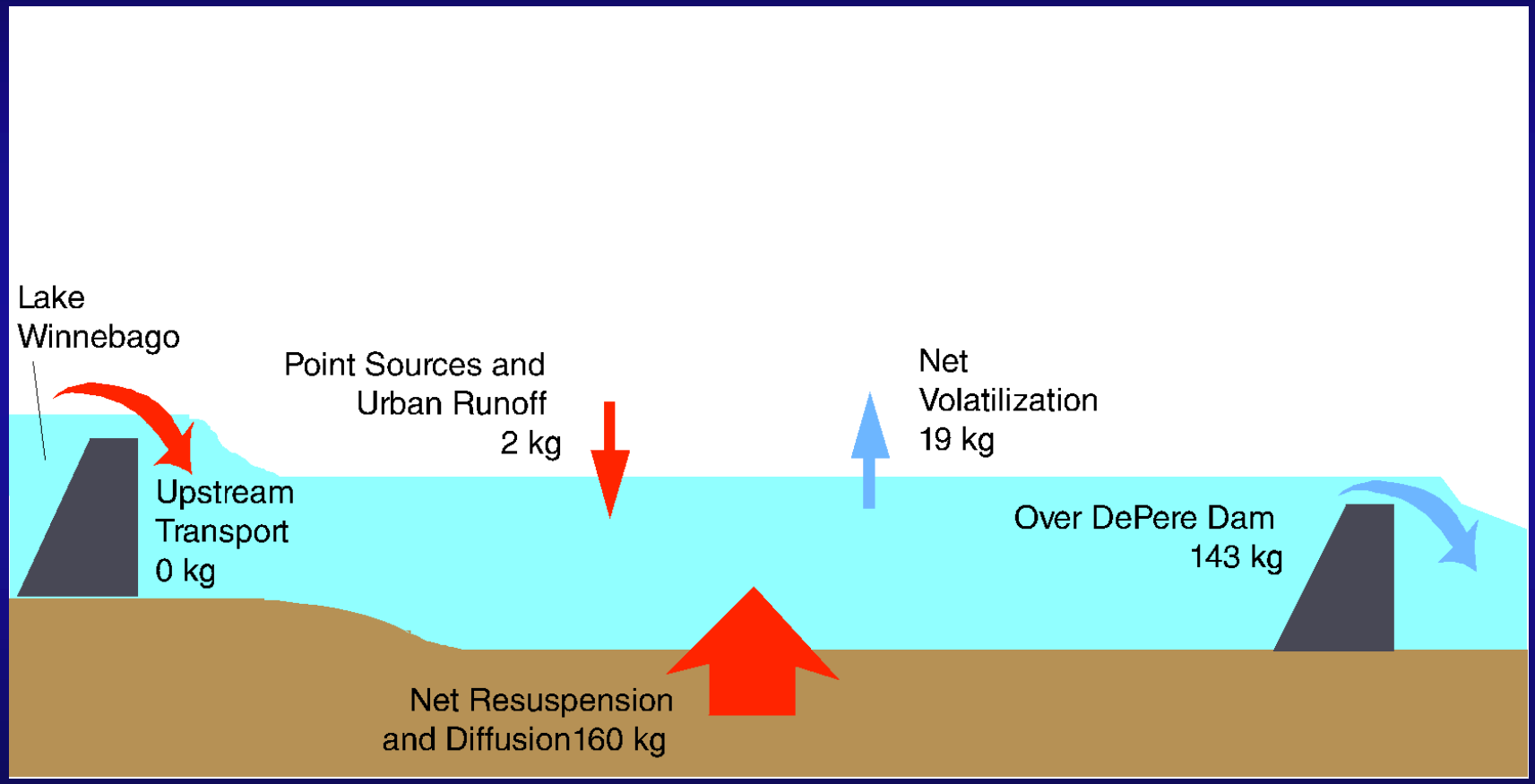
Transport of PCBs via Resuspension and Diffusion

- Fox River Study found that transport was dominated by resuspension of contaminated sediment 2
- Decreasing runoff events decreases resuspension of contaminated sediments.
- Co-benefit of BMP implementation



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Questions?

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